Gamesa Wind Overview Presentation
Indiana Wind Conference
July 21, 2010

Gamesa Overview:
Gamesa Corporation Scope:

Gamesa

Public company

Headquartered in Bilbao, Spain

2009 Worldwide Revenue: $4.3B USD

25 Manufacturing Locations in
4 countries: Spain/USA/China/India
Vertically integrated manufacturing

7,200 employees worldwide

16,000 MW of installed Wind Turbines in 20 countries

21,000 MW in Wind Farm developments
EU/US/China

Gamesa Overview:
Gamesa US:

US division of Gamesa Corporation Technology
Headquarters in Langhorne, PA

Design, manufacture, erect and development of wind turbines and farms
2 Wind Farm developments – PA & IL

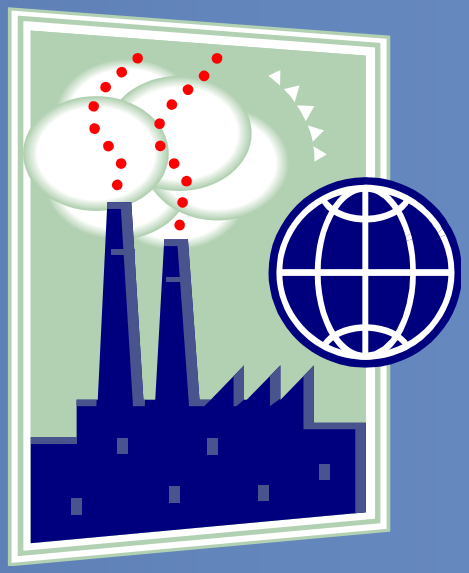
2009 revenue of $800M USD

2 manufacturing locations in Pennsylvania
Fairless Hills and Ebensburg, PA

750 employees

2113 MW installed and under management

$200 M invested since 2005 in PA



Gamesa Overview:
Gamesa US:

CHRONOLOGY of GAMESA US:

2002 Decision by Board of Directors to enter the N.A. market
Q1 2003 Began R&D on G8X product for N.A. market
Q3 2003 First Gamesa wind farm constructed in Compton, IL – 63 units G52
Q4 2003 Gamesa Wind US division established
2004 Pennsylvania selected as the site for Gamesa US headquarters
Q1 2005 Philadelphia sales office opened
Q4 2005 Site preparation began in Fairless Hills, PA for a manufacturing plant
Q1 2006 Boulevard, CA wind farm was constructed – 25 units G87
Q3 2006 Manufacturing of nacelles, blades & towers began in Fairless Hills, PA
Q4 2006 Manufacturing of blades began in Ebensburg, PA
Q4 2007 1000MW installed in N.A.
Q1 2008 Construction of 2nd Gamesa Wind Farm in Portage, PA 35 units G87
Q3 2008 Opened Gamesa headquarters in Oxford Valley, PA
Q3 2009 2000 MW installed in N.A.
Q4 2009 Dirk Matthys named Chairman and CEO of Gamesa U.S.

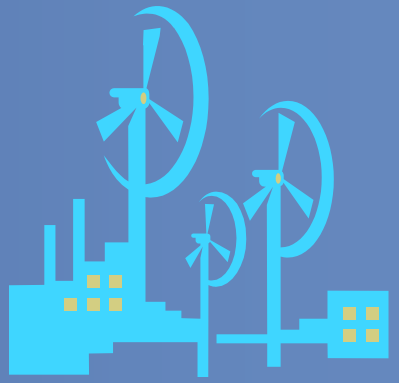
Gamesa Overview:
Gamesa US:

Gamesa

Introduction of New Products:

2010:

- 100 Meter Tower
- Introduction of 90 meter rotor – Class IIIA winds
- Seismic towers
- High altitude package designed for 2000 meters (6000 ft)
- Cold weather package designed for -40C
- Gamesa NRS (Noise Reduction System)
- Shadow control for blades
- O&M Services - Improvements and expanded coverage
- WOSS System – WF optimization sequencing system (Lean)



2011:

- **G9X 2.0 MW wind turbine – Designed for Class IIA winds**
- Prototype of G10X – 4.5 MW wind turbine

Gamesa participates and is a leader in several organization that are working on improving wind turbine design and efficiency.

Gamesa Overview:
Gamesa Worldwide Industrial Footprint Capacity

Production centers in Europe, America, India and Asia

Nacelles

6 FACTORIES
>3.600 MW

Towers

5 FACTORIES
>1.500 MW

Blades

7 FACTORIES
>3.500 MW

Root joints

1 FACTORY
5.000 un.

Blade moulds

1 FACTORY
6 moulds
G8X**

Electrical equipment (Generators & Cabinets)

4 FACTORIES
>1.900 MW

Gearboxes

6 FACTORIES
>2.300 MW

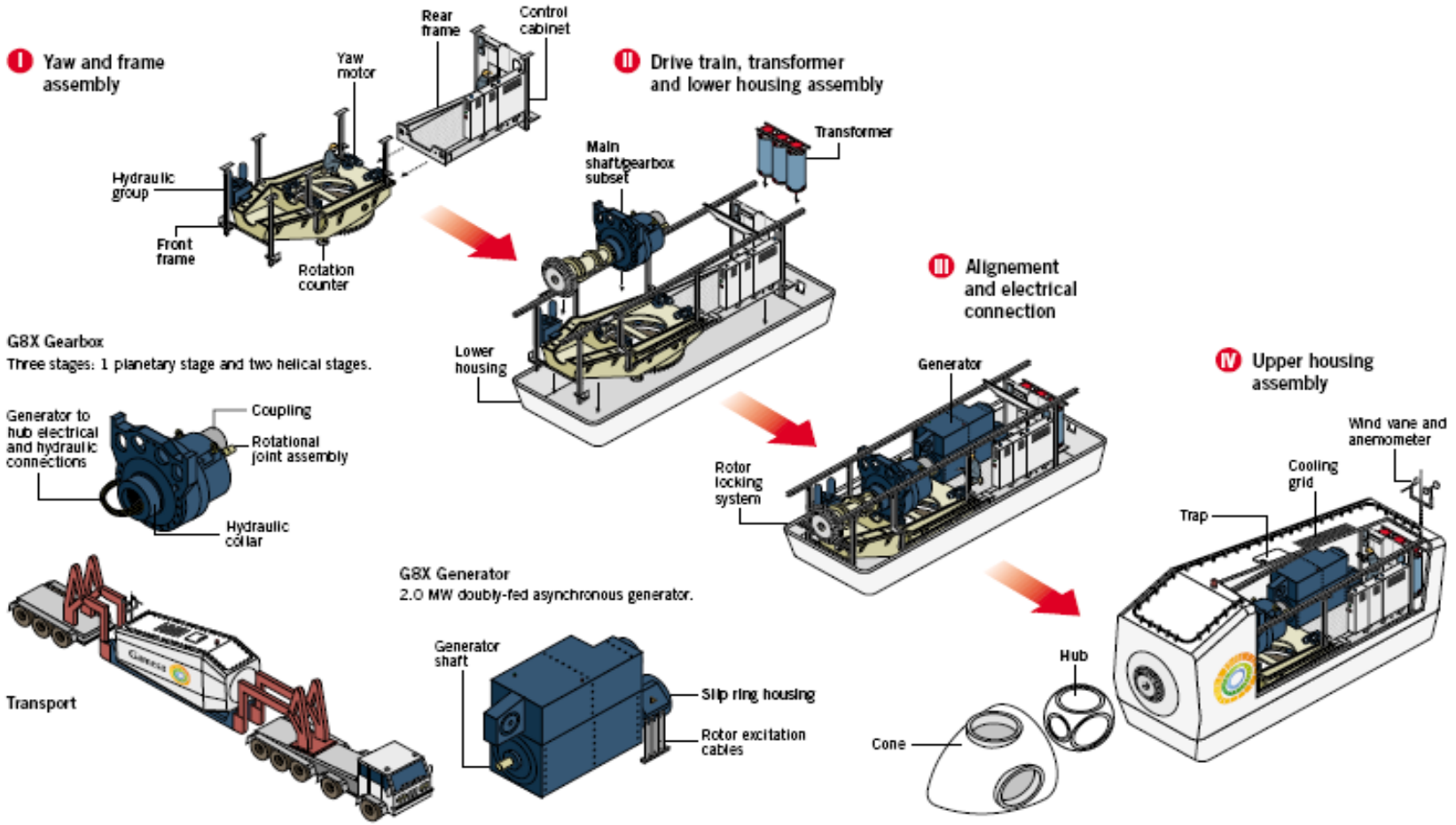
*Joint Venture with Grupo Daniel Alonso

**Possibility of manufacturing G5X moulds

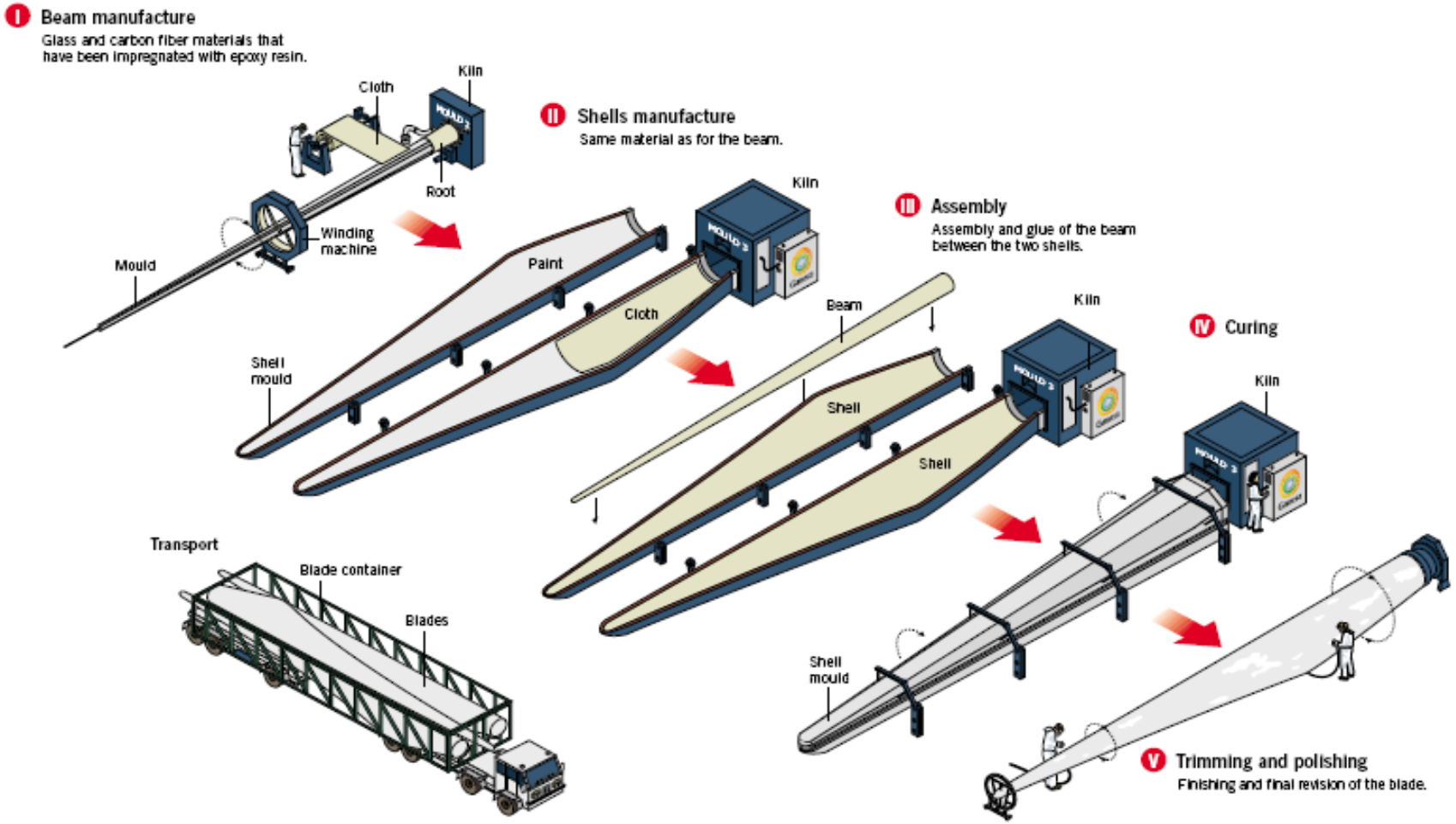
Large industrial capacity. 25 sites globally

Gamesa Overview:
Gamesa Worldwide Industrial Footprint Capacity

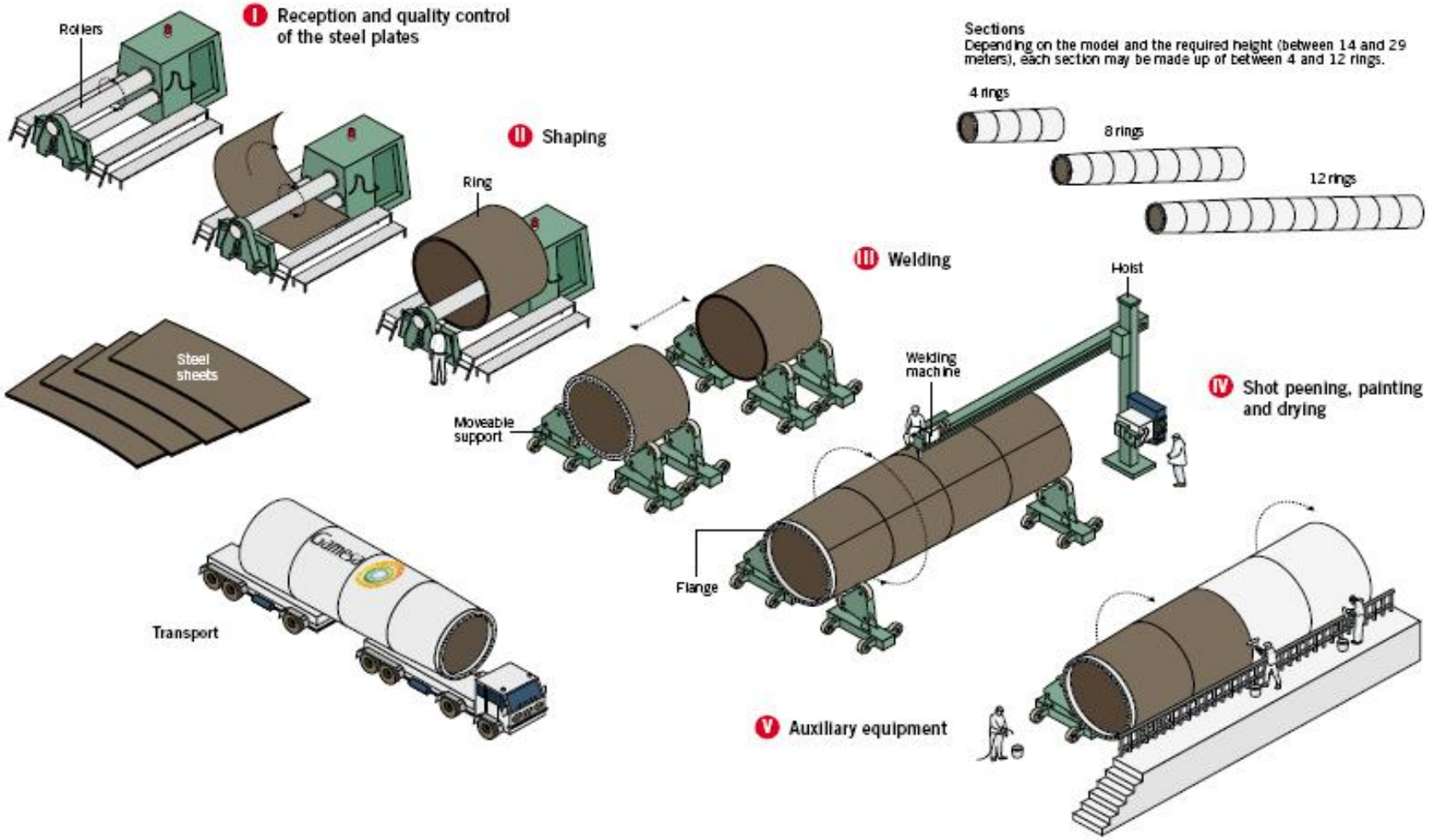
Manufacturing process: Nacelles Assembly



Manufacturing process: Blades



Manufacturing process: Towers



Production centres: Wind turbine assembly

WIND TURBINE ASSEMBLY PLANTS

		Total Area (m2)
Sigüeiro	La Coruña (Spain)	15.235
Tauste	Zaragoza (Spain)	17.000
Ágreda	Soria (Spain)	44.100
Medina del Campo	Valladolid (Spain)	83.622
Fairless Hills	Pensilvania (US)	31.150
Tianjin	China	41.640

Production centres: Towers

TOWER MANUFACTURING PLANTS

		Total area (m2)
Olazagutía	Navarra (Spain)	13,832
Cadrete	Zaragoza (Spain)	14,520
Linares	Jaén (Spain)	49,463
Avilés	Asturias (Spain)	70,000
Tajonar	Navarra (Spain)	Equipment

Production centres: Blades

BLADE MANUFACTURING PLANTS

		Total area (m2)
Alsasua	Navarra (Spain)	19,000
Somozas	La Coruña (Spain)	86,650
Miranda de Ebro	Burgos (Spain)	18,500
Albacete	Albacete (Spain)	35,000
Tudela	Navarra (Spain)	9,670
Ebensburg	PA - US	88,981
Tianjin	Tianjin (China)	75,000

Production centres: Root-Joints

ROOT JOINT MANUFACTURING PLANTS

		Total area (m2)
Cuenca	Cuenca (Spain)	12,500

Production centres: Blade Moulds

BLADE MOULD MANUFACTURING PLANT

		Total area (m2)
Imarcoain	Navarra (Spain)	12,200

Gamesa Overview:
Gamesa Global Purchasing

- **Global purchasing presence**
  - **Resources in EU/NA/ASIA/INDIA**
- **Strategic purchasing approach**
  - **Total cost of ownership**
- **Focus on local supply chains**
  - **Reduce cycle time to meet customer needs**
- **Optimized logistics patterns**
- **Supplier development program**
  - **Performance metrics & feedback**
- **Introduction of lean techniques**
  - **Improve process & eliminate waste**

Gamesa Overview:
Gamesa US Purchasing

- Sourcing Organizational Structure - Three areas:
  - Purchasing Operations to support manufacturing and service parts
  - Purchasing Services to support construction and services
  - Logistics for both in and out bound
- Total spend is approximately $500M with 800 active suppliers for direct material, MRO, construction and services
- Sourcing of major components is lead by corporate purchasing in Spain
  - Local buyers support and implement the strategies
- Key initiatives to yield results are:
  - Supply base consolidation and reduction
  - Spend analysis to identify leverage opportunities
  - Optimize logistics patterns to ensure lowest landed cost.
  - Supplier workshops utilizing lean techniques to improve supplier performance and eliminate non-value added activities

Gamesa Overview:
Gamesa US Purchasing

- Heavy investment in WTG tooling is a major challenge for NA suppliers
  - Amortization of tooling into the piece price

- <u>Opportunities for NA suppliers exist in several areas:</u>

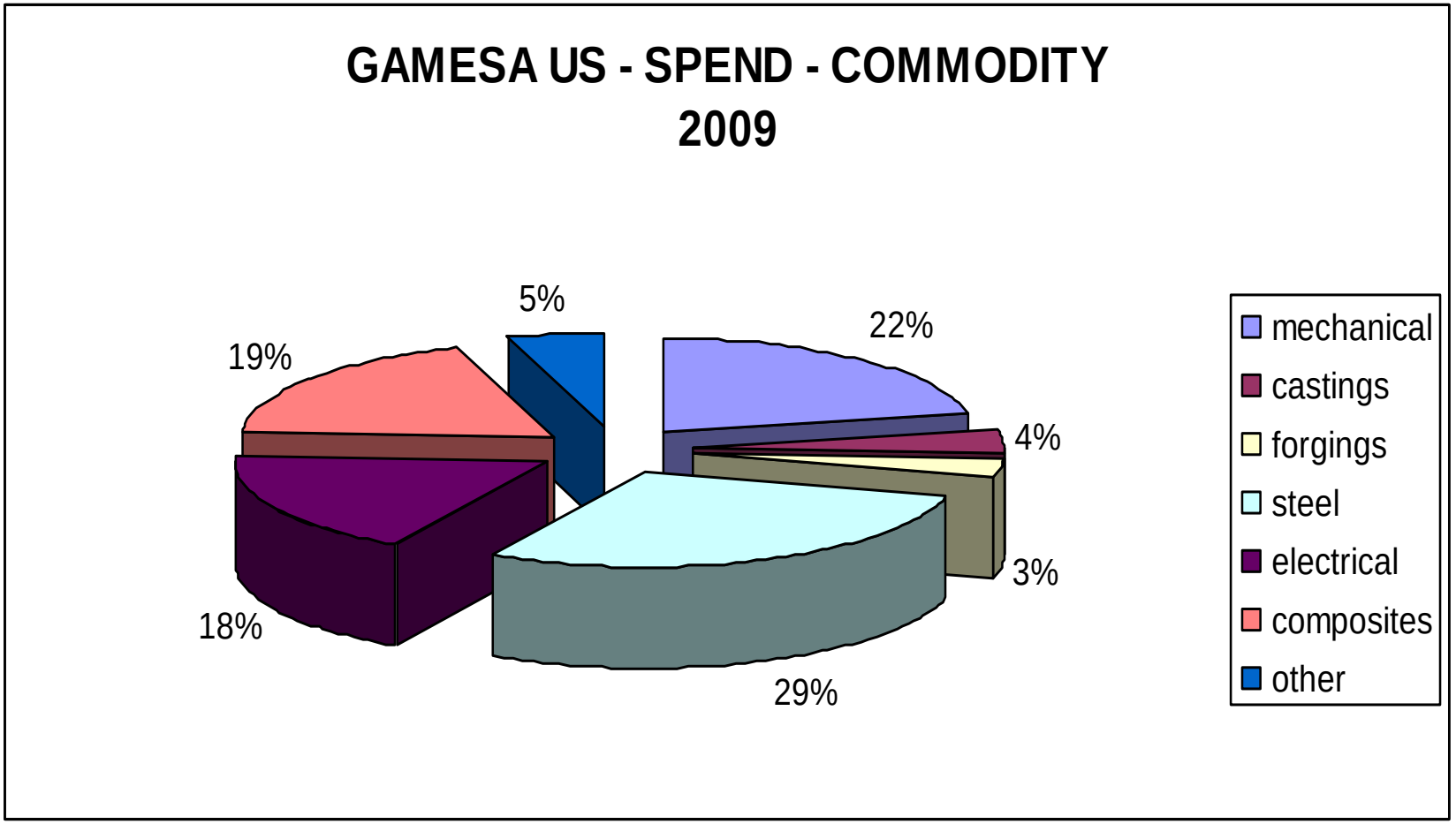
  - Specific quality inspection providers for electrical, electro mechanical and gear box inspection
  - Firms that can do Operations & Maintenance work up tower in the wind farms
    - This would include preventative maintenance and/or “punch-list” work
    - Requires extensive certifications
  - Repair of blades
  - Suppliers of large industrial portable generators
  - Fabricators of large, machined weldments

Opportunities for NA suppliers exist in several areas:

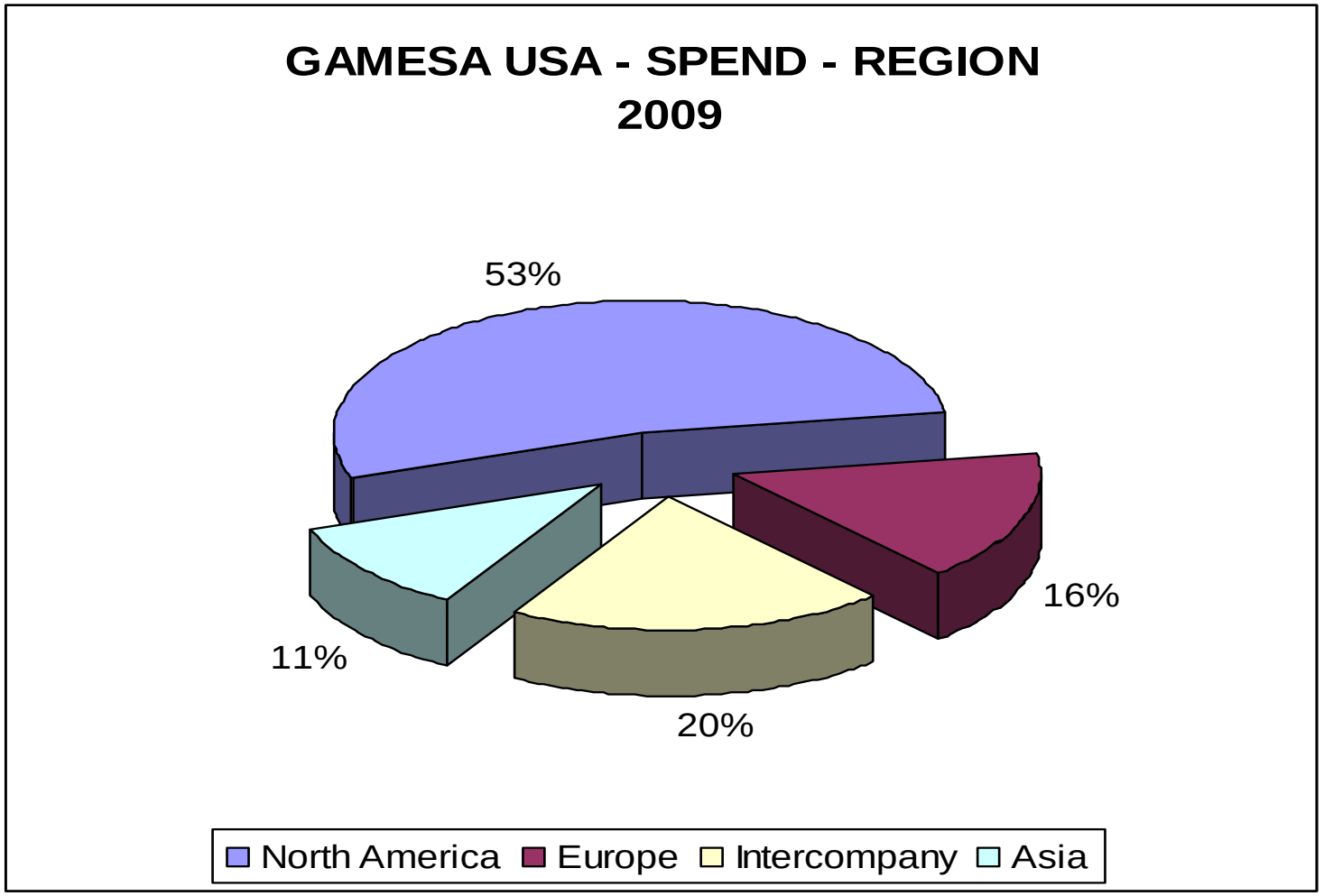
- Electrical cabling
- Engineered tools, fixtures and inspection devices for maintenance of wind turbines
- Transport of major assemblies to the wind farms
- Environmental inspection services
- Construction contractors to complete the civil work on the wind farms
    - Support the erection of wind turbines

Gamesa needs suppliers that can bring system/design solutions to improve wind turbine availability!

Gamesa Overview:
Gamesa Wind US Spend by Commodity



Gamesa Overview:
Gamesa Wind US Spend by Region



Gamesa Overview:
Gamesa Supplier Requirements

- **Successfully pass initial supplier quality assessment**
- **ISO9000 Certification**
- **Zero defect quality policy & systems**
- **ISO14001 Certification plan to achieve**
- **Strong customer satisfaction policy**
- **Supplier design capability both static and dynamic loading**
  - **Vibration loads in wind turbine**
- **Advance technological capabilities**
- **24 hours customer response policy to delivery and/or quality issues**
- **Advance product quality planning (APQP) system implemented**
- **Production part approval process (PPAP) implemented**
- **Lean culture and techniques utilized**
  - **Manufacturing & administration**
- **Healthy Financial Status**

Gamesa	**Initial questionnaire for supplier evaluation**	Code: PCA-1-006-R03
		Edition 2

PROJECT PLANNING					
A- Criteria to evaluate:		**0**	**3**	**6**	**10**
1.1	Has an internal revision and acceptance procedure of the external documentation been carried out?	0	0	0	0
1.2	Is it verified, using the experience of the manufacturer, if the documentation of the client contains all the data required to guarantee the quality of the part?	0	0	0	0
1.3	Does it have experience in developing parts and/or components with similar characteristics?	0	0	0	0
1.4	Is there a list of approved suppliers? Are only accredited suppliers that are deemed acceptable from the quality standpoint used?	0	0	0	0
1.5	Are there procedures defined to evaluate the quality of the suppliers?	0	0	0	0
1.6	Is the quality of the suppliers evaluated and, if the requirements are not met, are corrective actions established?	0	0	0	0
1.7	Is the quality of the products purchased guaranteed by means of the product approval processes, process validation, PPAP, ...?	0	0	0	0

Gamesa Overview:
Homologation Process:

Purpose:

- **Approval of materials and components from a supplier with the goal of achieving zero defects during serial production**
- **Verifies suppliers quality planning processes**
- **Validates the component processes**
- **Ensure components meet specification and latest revision level**

- **Homologation Process Steps:**
  - **Phase 1: Supplier's Qualification Assessment**
  - **Phase 2: Supplier Feasibility (Capability & Capacity)**
  - **Phase 3: Process and Product Design**
  - **Phase 4: Process Validation and Serial Mfg. Approval**
  - **Phase 5: Initial Samples**
  - **Phase 6: PPAP Closing. Start of Mass Production:**

Cost (Purchasing)

Material cost reduction as a % of spend
Acceptance of contract terms
Long Term Agreement in place
Productivity reduction plan in place?
Supplier currently in Gamesa SIP program?

Quality (SQA):

NCR's # at production
NCR's cost percentage
NCR's # at wind farm
Advance quality planning
Lack of notification deduction

Delivery (Planning):

Delivery performance to due on dock dates
Participation in Gamesa pull system?
Following packaging instructions?
Lead time reduction plan in place?
Line disruption deduction

Technology (Eng.):

Catia/Cad facilities
Bench mark technology
Best practices design
Design capabilities/DFSS
Design failure deduction

PRODUCT & PROCESS CONTROLS:

- **Always request approval from GAMESA prior to implementing:**
  - **Proposed material/product changes.**
  - **Anticipated process changes.**
  - **Internal manufacturing location changes**
  - **Any sub-supplier manufacturing location changes.**
- **Management of sub-suppliers**
- **Proactively communicate with GAMESA.**
  - **Notify GAMESA SQA in a timely manner of issues**
- **Notify GAMESA of possible supply/capacity issues**

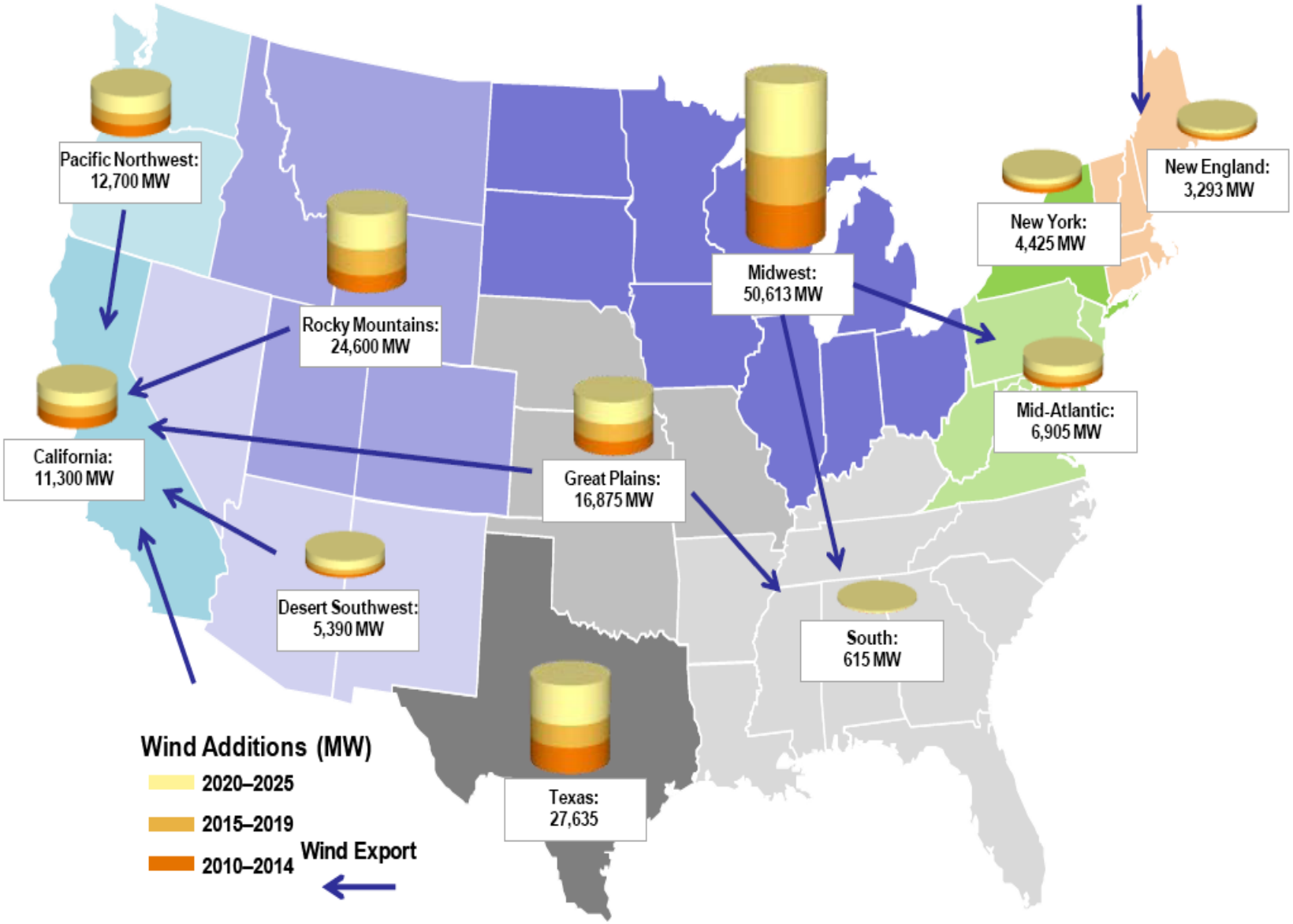
Wind power generation is a growth market:

- Globally 37.5 GW of wind power capacity was added in 2009
- Wind power generation in the US grew by 39% in 2009
  - Added 10,000 MW of generation to the grid
- Asia has installed 13,000 MW in 2009
  - Y.O.Y. increase of 100%!
  - Asia now has 25.1 GW of installed wind generation capacity
  - 20 – 30 new Asian OEMs will enter N.A. market
    - Will bring their supply chains with them

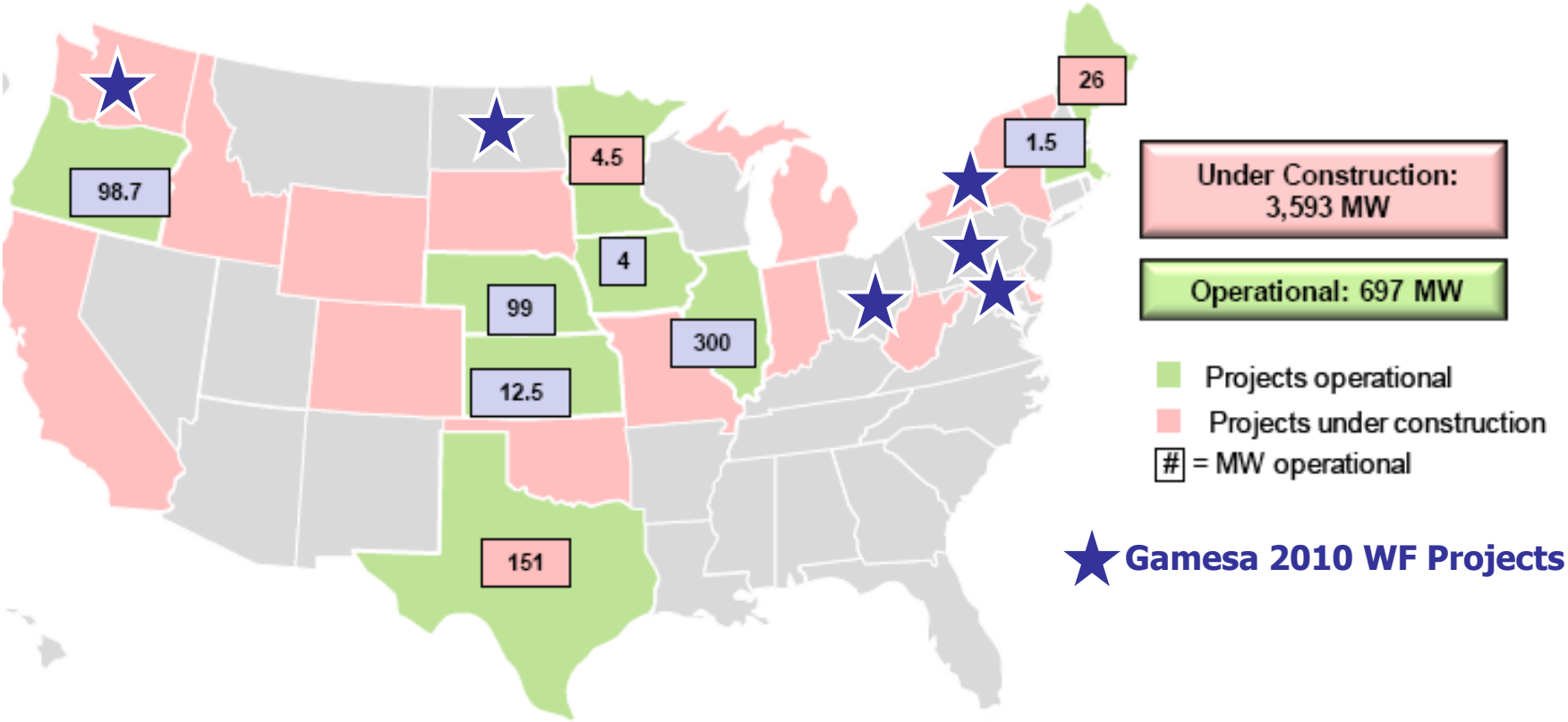
This is a Global Market!

Source: Global Wind Energy Council

US Wind Power Base-Case Scenario, Regional Breakdown: 2010–2025



Source: IHS Emerging Energy Research



Gamesa spends where the wind farms are constructed

Source: Emerging Energy Research

Gamesa:
Global Presence; Local Focus